

Amendment and Response

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For: CRYSTALLIZATION AND STRUCTURE DETERMINATION OF STAPHYLOCOCCUS AUREUS NAD SYNTHETASE

Amendments to the Specification

Please replace the paragraph beginning at page 9, line 25, with the following amended paragraph.

In another aspect, the present invention provides a crystal of *S. aureus* NAD synthetase. Preferably the crystal has the monoclinic trigonal space group symmetry $P2_1$. Preferably the crystal includes a unit cell having dimensions of a, b, and c; wherein a is about 40 Å to about 60 Å, b is about 90 Å to about 120 Å, and c is about 80 Å to about 110 Å; and wherein $\alpha = \gamma = 90^\circ$ and β is about 80° to about 120°. Preferably the crystal includes atoms arranged in a spatial relationship represented by the structure coordinates listed in Table 1. Preferably the crystal of has the amino acid sequence SEQ ID NO:1. Optionally at least one methionine may be replaced with selenomethionine.

Please replace the paragraph beginning at page 16, line 17, with the following amended paragraph.

Applicants have produced crystals comprising *S. aureus* NAD synthetase (and substrate or inhibitor), which are suitable for x-ray crystallographic analysis. Preferably, the crystals have one dimension of 0.15-0.8 mm, and more preferably dimensions of 0.15-0.8 mm x 0.2 mm x 0.05-0.1 mm. The three-dimensional structure of *S. aureus* NAD synthetase or *S. aureus* NAD synthetase/ligand complex was solved using high resolution x-ray crystallography. Preferably, the crystal has the monoclinic trigonal space group symmetry $P2_1$. More preferably, the crystal comprises unit cells, each unit cell having dimensions of a, b, and c; wherein a is about 48 Å to about 53 Å, b is about 102 Å to about 113 Å, and c is about 87 Å to about 97 Å; and wherein $\alpha = \gamma = 90^\circ$, β is about 80° to about 120°. The crystallized enzyme is a dimer and has two dimers in the asymmetric unit. Accordingly, one embodiment of the invention provides an *S. aureus* NAD synthetase or *S. aureus* NAD synthetase/ligand crystal.